Molybdenum and Zinc on 2023 Spring Canola in the Idaho Palouse

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Introduction

Molybdenum (Mo) nutrition has not been extensively studied in canola. *Brassica* species tend to be sensitive to Mo deficiencies, and acid soils and sulfur applications are antagonistic to Mo update. Zinc (Zn) is a regulatory, functional, or structural component of many cofactors and enzymes that drive metabolic reactions, and zinc levels are generally low in PNW soils. This study evaluated different application methods of Mo and Zn on dryland spring canola in the Palouse region of Idaho.

Materials and Methods

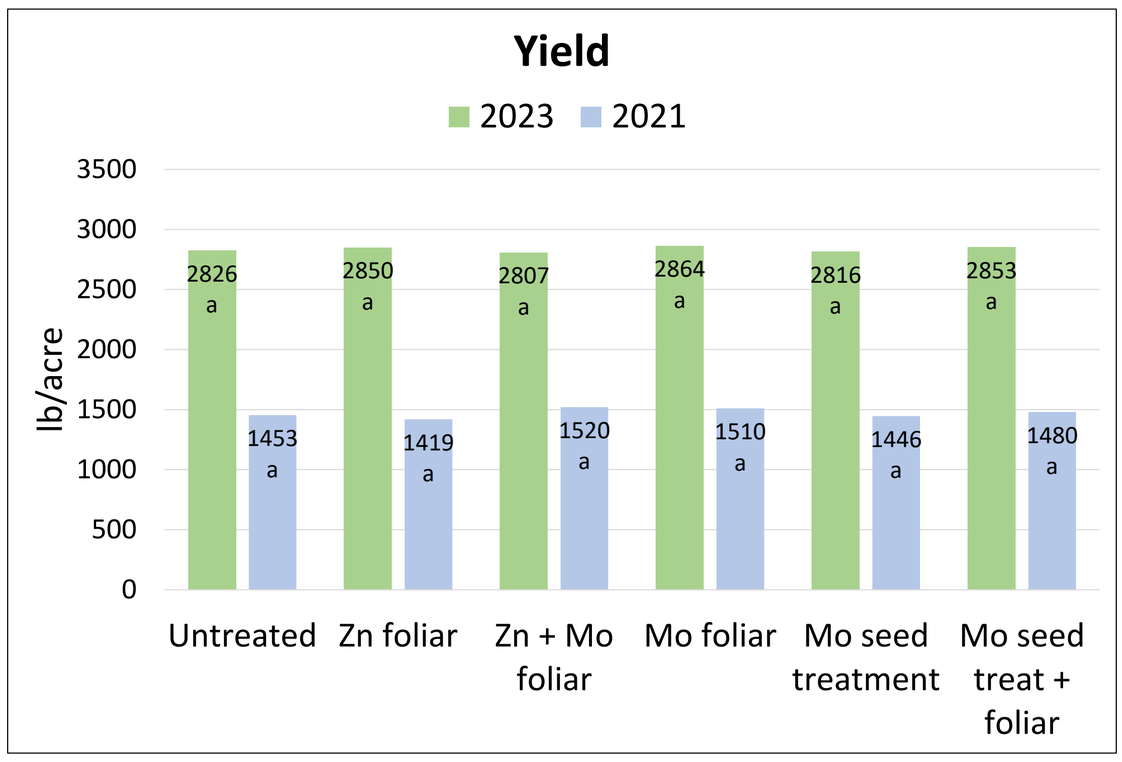
This protocol was repeated from a 2021 season trial. On May 11, 2023, a Great Plains plot drill was used to seed 5' x 20' plots in Genesee, Idaho. 9978TF was planted in 7.5" rows at 5 lb/ac seeding rate. Treatments were replicated six times and arranged in a randomized complete block design:

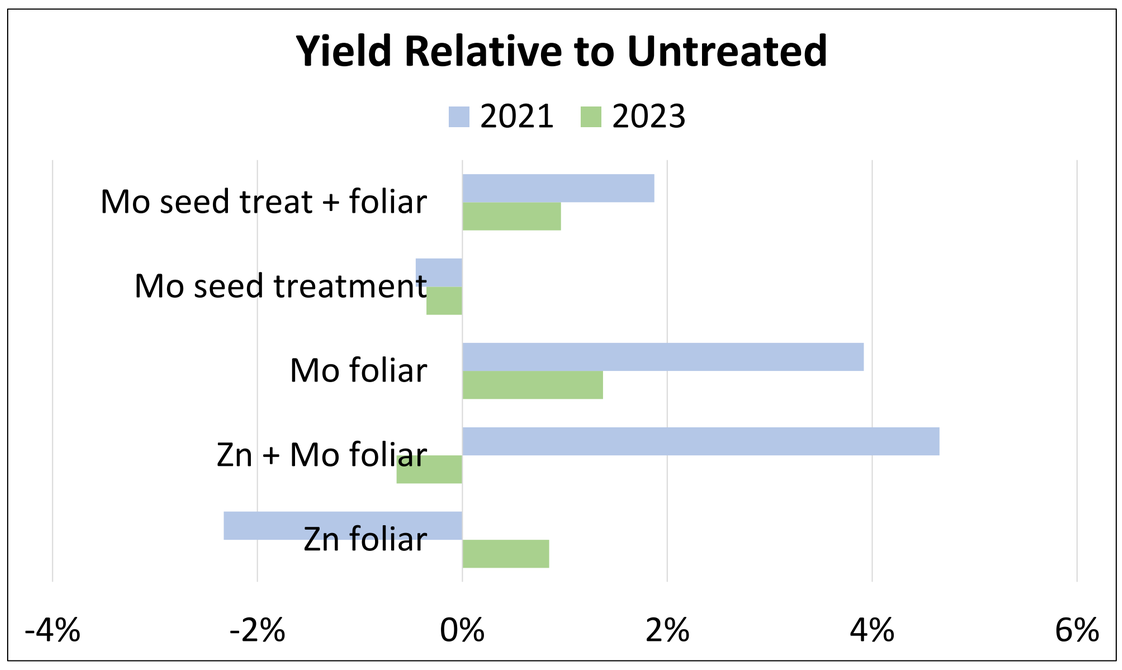
Trial Treatments
Zinc foliar
Zinc + Molybdenum foliar
Molybdenum foliar
Molybdenum seed treatment
Molybdenum seed treatment + foliar
Untreated grower standard

For Zn treatments, a 9% zinc EDTA product was used at 16 fl oz/ac. For Mo treatments, a 39% sodium molybdate product was used at 8 fl oz/ac foliar and 1.3 oz/bu seed treatment. Seed treatments were applied with a Hege 11 laboratory treater. A CO_2 powered backpack sprayer was used to make the foliar application on June 2 (glyphosate timing) at 15 gal/ac spray volume. Ten days later, an NDVI scan was conducted on each plot, and a SPAD meter was used to measure chlorophyll content on five leaves per plot. Plots were harvested on September 11 with a Zurn 150 plot combine. ANOVA ($\alpha = 0.10$) were performed for statistical analyses in RStudio.

Results

No clear or consistent visual distinctions between treatments were evident. SPAD chlorophyll content was highest in Zn foliar and Mo foliar but statistically similar between treatments. All treatments numerically increased NDVI relative to untreated. Zinc foliar, Mo foliar, and Mo seed treat + foliar all led to slight improvements in yield compared to untreated. These results did not generally echo 2021 findings. Over both seasons, no clear or statistical improvements in yield were evident due to Mo or Zn treatment. At this time, this study does not offer compelling evidence to warrant Zn or Mo applications.






Untreated


Zn foliar


Zn + Mo foliar


Mo foliar


Mo at plant + foliar


Mo at plant

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